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May 13, 2022

VIA ELECTRONIC FILING

The Honorable Jocelyn G. Boyd
Chief Clerk and Executive Director
Public Service Commission of South Carolina
101 Executive Center Drive, Suite 100
Columbia, SC 29210

Re: Joint Petition of Duke Energy Carolinas, LLC and Duke Energy Progress, LLC to Establish a Consolidated Informational Docket for Review and Consideration of Grid Improvement Plans (NDI Opened Pursuant to Commission Order No. 2020-533) Docket No. ND-2020-28-E

Informational Update on Stakeholder Meeting Held May 12, 2022

Dear Ms. Boyd:

On August 12, 2020, by Order 2020-533 in Docket No. 2019-381-E, the Commission approved Duke Energy Carolinas, LLC's ("DEC") and Duke Energy Progress, LLC's ("DEP") (collectively, the "Companies") joint request to establish an informational docket for review and consideration of its Grid Improvement Plan ("GIP"). As a result of that order, on August 14, 2020, the Commission opened the above-referenced NDI docket.

On April 4, 2022, the Companies filed the 2021 SC GIP Status Reports for DEC and DEP. These reports showed how the Companies are performing in terms of program costs and units compared to its targets. The Narrative summary filed with the reports elaborated on SC GIP key accomplishments from 2019-2021.

On May 12, 2022, the Companies held a South Carolina Grid Improvement Plan 2021 Status Report virtual forum. During this session, subject matter experts discussed select 2019-2021 SC GIP accomplishments as well as program and project specific highlights. Presenters were available for questions submitted during the forum. The Companies appreciated the engagement from stakeholders who attended.

The following attachments enclosed with this update provide additional information on the virtual forum.

- Attachment A: Invitation to Virtual Forum
- Attachment B: Invitation Distribution List
- Attachment C: List of External Attendees Registered
- Attachment D: List of External Attendees
- Attachment E: South Carolina GIP 2021 Virtual Forum Presentation
- Attachment F: Virtual Forum Follow-Up Survey

The Companies will continue to inform stakeholders, the ORS and the Commission on developments in the Companies' GIPs.

Sincerely,

Camal O. Robinson

Attachments

cc: (via email w/ enclosure)
Counsel for Office of Regulatory Staff
Department of Consumer Affairs
Counsel for Sierra Club
Counsel for Walmart, Inc.
Counsel for SELC on behalf of SC NAACP, SCCCL & Upstate Forever
Counsel for Nucor Steel-South Carolina
Counsel for SCSBA and Cypress Creek Renewables
Counsel for SCEUC
Counsel for Vote Solar
Counsel for CMC Recycling
Hasala Dharmawardena

Underwood, Lizzy

From: GIP-engagement
Sent: Tuesday, April 5, 2022 10:37 AM
Subject: You are invited! 05/12 Duke Energy Virtual Forum - 2021 SC GIP Status Report



Good morning,

Duke Energy's Grid Improvement team would like to invite you to a virtual forum on May 12th, 2022 from 1:30 – 3:00 p.m. The purpose of the forum is to update interested stakeholders on the Grid Improvement Plan's continued progress, provide program and project highlights, listen to your feedback, and respond to questions you may have. In Docket No. ND-2020-28-E, you can find the [2021 SC GIP Status Report Documents](#), which were filed on April 4th.

If you wish to participate in the virtual forum, we ask that you please register by Monday, May 9th using this link: [Register here!](#)

Prior to May 12th, you will receive an e-mail with the details for joining the Microsoft Teams meeting.

For assistance with registration, please email: Eventsupport@duke-energy.com. If you have any questions, need additional information or to request a topic to be covered in the forum, please feel free to reach out to GIP-Engagement@duke-energy.com.

Thank you very much for your continued interest in Duke Energy's Grid Improvement Plans, and we hope that you will join us on May 12th!

Melissa Chandler Murphy

Director, Stakeholder Engagement

Duke Energy Corporation | 40 West Broad Street, Suite 690 | Greenville, SC 29605

e: melissa.murphy@duke-energy.com

May 12, 2022 Virtual Forum - External Distribution List

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John	Brooker	jbrooker@cvsc.org	Conservation Voters of South Carolina
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May 12, 2022 Virtual Forum - External Attendee Registrant List

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Steve	Chriss	stephen.chriss@walmart.com	Wal Mart
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First Name	Last Name	E-mail Address	Organization
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Anthony	Sandonato	asandonato@ors.sc.gov	SC ORS
Thomas	Siegrist	tw@smxblaw.com	Stone Mattheis Xenopoulos & Brew



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THANK YOU FOR JOINING US.

The Virtual Forum will be starting shortly.



BUILDING A **SMARTER** ENERGY FUTURE®

TODAY'S AGENDA



Meeting Logistics and Presenters



Megatrends and Key Accomplishments



Program and Project Highlights - Transmission



Program and Project Highlights - Distribution



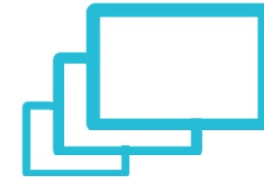
MEETING LOGISTICS



This meeting will not be recorded by Duke Energy, and we ask that attendees do not record as well.



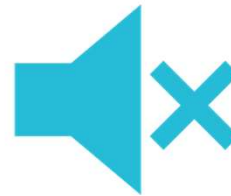
The presentation will be filed with the Commission after this session.



For optimal viewing of the presentation, please maximize the window by clicking the ellipsis at top, scrolling down and selecting “Full Screen.” To minimize, de-select “Full Screen.”



For technical difficulties, please use the chat feature to let us know if you are having challenges seeing or hearing anything. We will be monitoring those comments and will assist you with troubleshooting by chatting with you directly.



All attendees, apart from designated speakers, are muted to mitigate background noise disruptions.



Please submit questions through the Teams meeting chat. Speakers will address questions as time allows. If you have questions aside from today’s topic or if time does not allow us to answer today, we will follow up with you directly.

TODAY'S PRESENTERS



Brent Guyton
Customer Delivery
Carolinas



Amy Howe
Transmission



Leslie Clark
Customer Delivery
Carolinas



Kenneth McCraw
Customer Delivery
Carolinas

TODAY'S PRESENTERS



Eugene Moore

Customer Delivery
Distributed Energy
Group



Clifton Cates III

Customer Delivery
Carolinas



Sam Spilman

Customer Delivery
Carolinas



Justin Brown



Planning & Regulatory
Support



MEGATRENDS AND KEY ACCOMPLISHMENTS

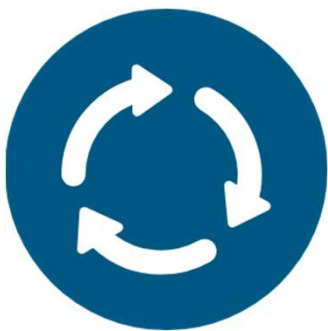
Brent Guyton
Director, Customer Delivery Carolinas Asset Management

MEGATRENDS

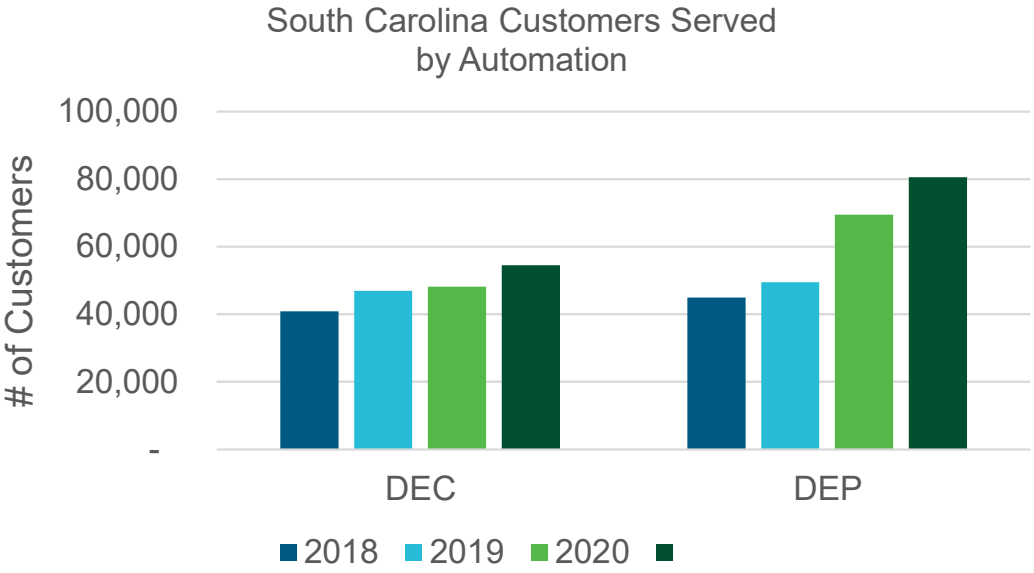
Megatrend	Description	Supporting information
 Impact of weather events	Increasing intensity in the number, severity and impact of weather events is leading to more outages for customers	South Carolina was impacted by a record of 10 “Billion-dollar storms” in 2020 (most in South Carolina’s history) ²
 Technology advancements - renewables and DERs	Renewables and DERs are becoming a significant capacity resource on the grid and are expected to grow rapidly over the next few decades	Installed solar capacity in South Carolina will increase 17% and reach ~4.1 GW by 2025 ¹
 Threats to grid infrastructure	Purposeful threats to the electric grid are on the rise, including physical and cyber threats (e.g., ransomware, theft)	Ransomware in the US increased 62% in 2021 ³ , and utility cybersecurity spending is expected to double by the end of the decade ⁴
 Environmental trends	Private and public sector commitments to clean energy escalates customers’ desire for safe and reliable DER access	60% of Fortune 500 companies (incl. companies in SC such as BMW, Michelin, etc.) have set carbon emissions goals ⁵
 Grid improvement	Grid improvement technology has advanced over the last decade, giving utilities alternatives to traditional grid infrastructure options	Advancements in tech provide new solutions; U.S. market for smart grid IT and analytics software to grow from \$3B to \$6B (2019 to 2028) ⁶
 Concentrated population growth	Population growth is concentrating in urban and suburban areas	Three South Carolina cities are among the 20 fastest growing nationally ⁷
 Customer expectations	Customers increasingly want to save money, reasonably reduce outages, and safely access clean energy options	Reliability and affordability are the most common feedback topics for Carolina's customers in a recent survey ⁸

Source: ¹SEIA 2021; ²NOAA 2021; ³Sonic Wall 2021; ⁴Guidehouse 2019; ⁵World Wildlife Fund 2021; ⁶U.S. DOE 2018; ⁷US News & World Report; ⁸Duke energy CXM 2020 survey

KEY ACCOMPLISHMENTS



SELF-OPTIMIZING GRID (“SOG”)

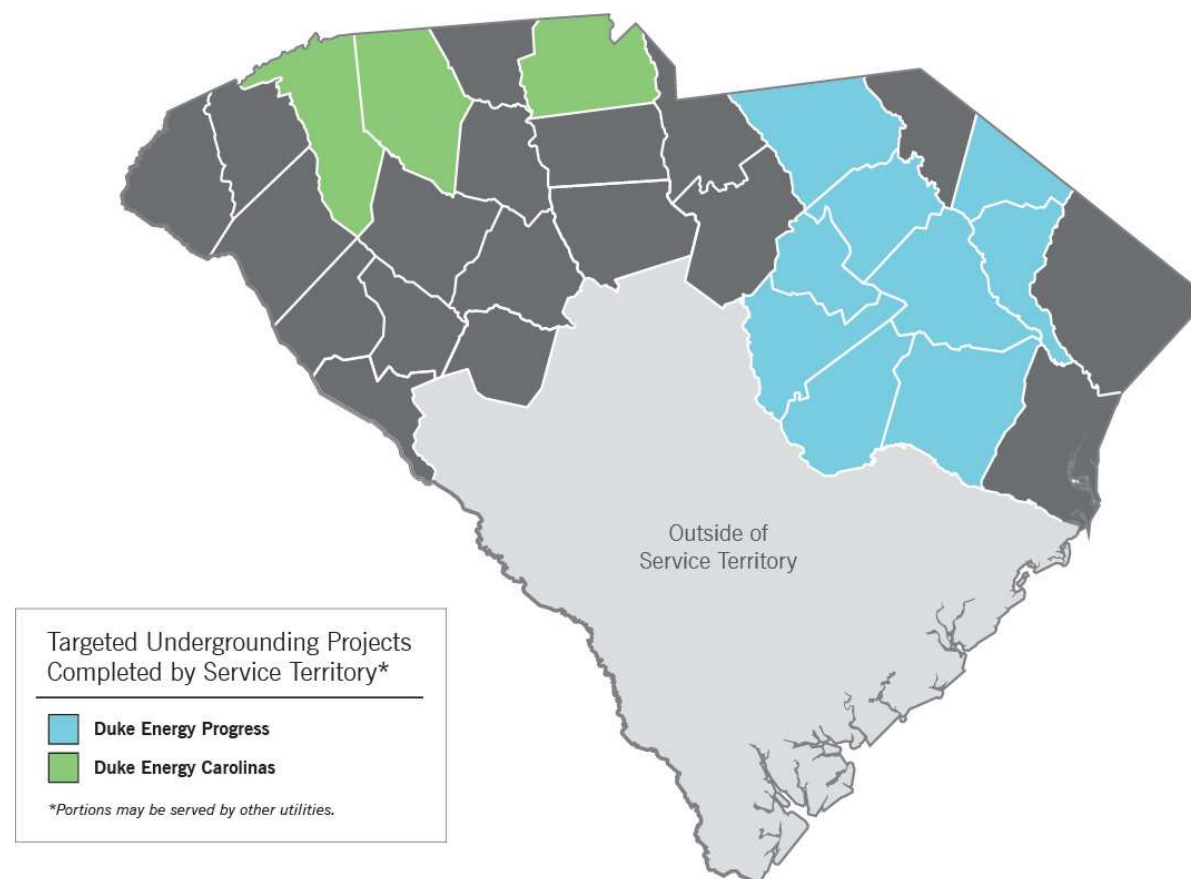


KEY ACCOMPLISHMENTS

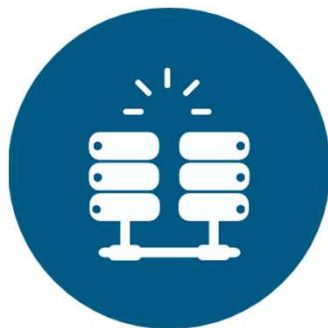


TARGETED UNDERGROUNDING ("TUG")

- 19.5 miles in DEC and 7.4 miles in DEP of overhead conductor have been converted to underground on outage prone parts of the system
- Through December 31, 2021, projects have been completed in 12 counties across DEC and DEP territories as shown:

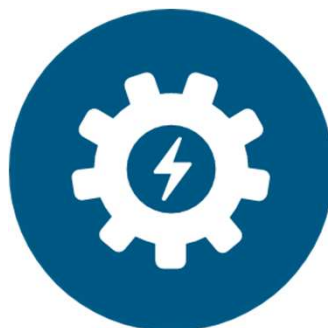


KEY ACCOMPLISHMENTS



INTEGRATED VOLT-VAR CONTROL ("IVVC")

Through December 31, 2021, the IVVC program has installed 18% of the capacitors, installed 67% of the regulator controls and associated load balancing efforts resulting in 116 circuits commissioned in preparation for voltage reduction.

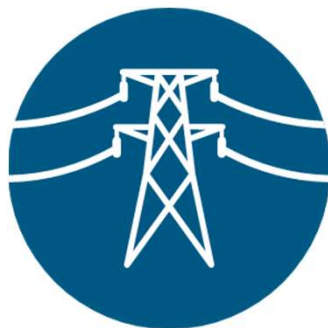


INTEGRATED SYSTEMS AND OPERATIONS PLANNING

The Advanced Distribution Planning ("ADP") toolset achieved full-scale deployment to distribution planners in the Carolinas in August 2021.

- Deployment of ADP tools and processes are transforming distribution planning by introducing automation to improve efficiency of complex analytical processes needed for distribution-oriented investments that include distributed energy resources ("DER").
- When planning for system upgrades, ADP also facilitates the evaluation of battery energy storage systems as non-traditional solutions to serve those system growth needs and potentially defer distribution investments.

KEY ACCOMPLISHMENTS



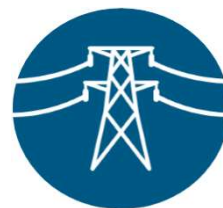
TRANSMISSION SYSTEM INTELLIGENCE

Installations of intelligent communication equipment have been completed at 28 South Carolina substations (128 Carolinas system-wide).



TRANSMISSION OIL BREAKER REPLACEMENTS

Work was accelerated to prioritize reliability and environmental improvements. Approximately 55 distribution and transmission oil breakers were replaced through December 31, 2021.



TRANSMISSION – PROJECT HIGHLIGHTS

Amy Howe

Director, Transmission Asset Management

TRANSMISSION LINE HARDENING & RESILIENCY

TUXEDO A & B 44KV LINE REBUILD

- Transmission Line upgrades on the Tuxedo 44-kV circuits A and B in Spartanburg County has strengthened 10 miles.
- This improves reliability for more than 8,000 customers.



ORIGINAL WOOD H-FRAME



NEW STEEL POLE

TRANSMISSION OIL BREAKER

BREAKERS

The Oil Breaker replacement program isolates faults to the smallest section of the system to minimize customer outages.

- Florence West breaker replacements improves reliability for over 3,000 customers.

KEY ACCOMPLISHMENT

Approximately **55** Transmission and Distribution breakers replaced through December 31, 2021.



New vacuum breaker replaces oil breaker

TRANSMISSION SYSTEM INTELLIGENCE

SYSTEM INTELLIGENCE

The System Intelligence program improves reliability for customers by helping avoid unplanned outages and reduce duration / impacts when outages occur.

- Florence Dupont – Marion line – Installation of remote switch that enables faster restoration for over 4,000 customers.

KEY ACCOMPLISHMENT

Installations of intelligent communication equipment have been completed at **28** South Carolina substations



New remotely capable switch installation

TRANSMISSION SUBSTATION HARDENING & RESILIENCY

ANIMAL MITIGATING FENCES – MULTIPLE LOCATIONS

- Installation of the fences mitigates animal related outages for approximately 70,000 customers
- Fences have been installed at 5 substations including:
 - Peach Valley Tie (Spartanburg)
 - Anderson Tie (Anderson)
 - Belton Tie (Anderson)
 - Augusta Rd (Greenville)
 - Eastover (Greenville)



EASTOVER
RETAIL



ANDERSON
TIE

Duke Energy - General Information for Discussion



DISTRIBUTION – 2021 PROJECT HIGHLIGHTS

Leslie Clark

Project Director, Customer Delivery Carolinas Major Projects

Kenneth McCraw

Director, Customer Delivery Carolinas Project Management

Eugene Moore

Sr Project Manager, Customer Delivery Distributed Energy Group

Clifton Cates III

Manager, Customer Delivery Carolinas Asset Management

INTEGRATED VOLT/VAR CONTROL (IVVC)

SUBSTATIONS

100%

Assessment

93%

Engineering

15%

IVVC Ready
Substations

CIRCUITS

60%

Assessment

56%

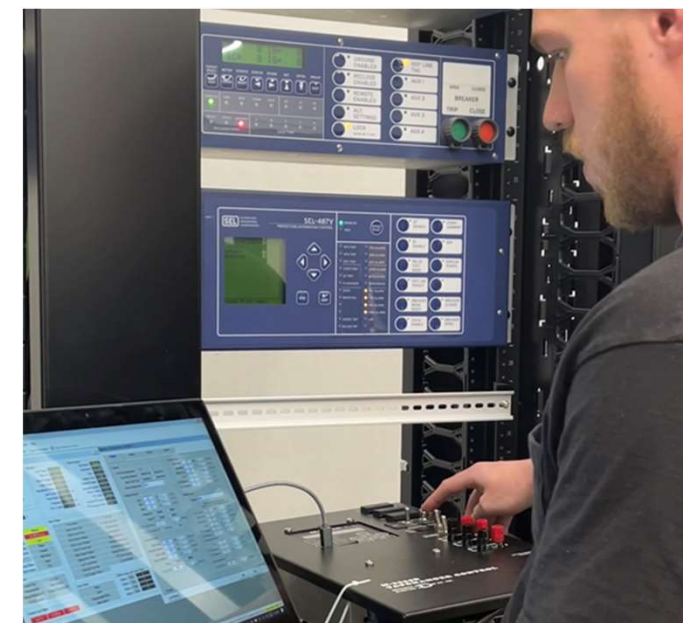
Engineering

27%

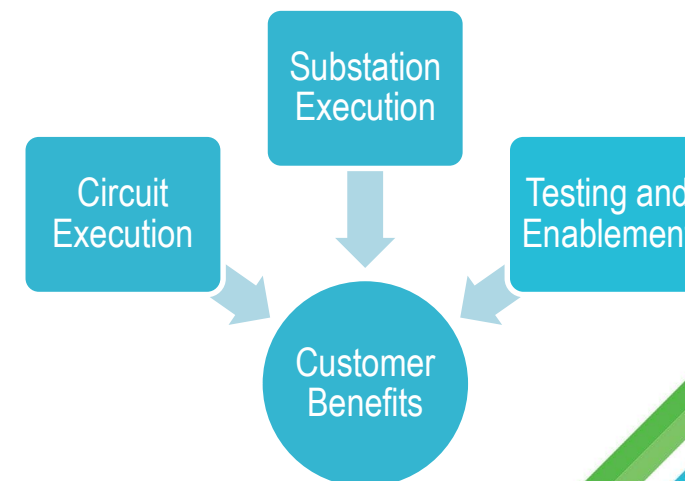
IVVC Ready
Circuits

TESTING AND ENABLEMENT

- Software and reporting infrastructure upgrades are taking place to facilitate system operations and tracking of voltage reduction.
- The project is on track to begin testing completed substations in 2022 and enabling substations to start delivering capacity and energy savings on approximately 10% of targeted substations in 2023. Ramping up to 100% in 2025.



IVVC LAB



UNDERGROUND SYSTEM AUTOMATION

DOWNTOWN GREENVILLE, SOUTH CAROLINA PROJECT

- Improves reliability for thriving Greenville downtown/business center
- 13 vaults completed as of December 31, 2021
- Project has included installations of:
 - Switchgear relays for SCADA and self-healing capabilities
 - Ductbank infrastructure
 - Primary circuit extensions
 - Fiber networks



NEW MANHOLE INSTALLATION

Duke Energy - General Information for Discussion

UNDERGROUND SYSTEM AUTOMATION

PRIMARY CABLE PULLING



DUCTBANK INSTALLATION



UNDERGROUND SYSTEM AUTOMATION

VOLTAGE SENSORS

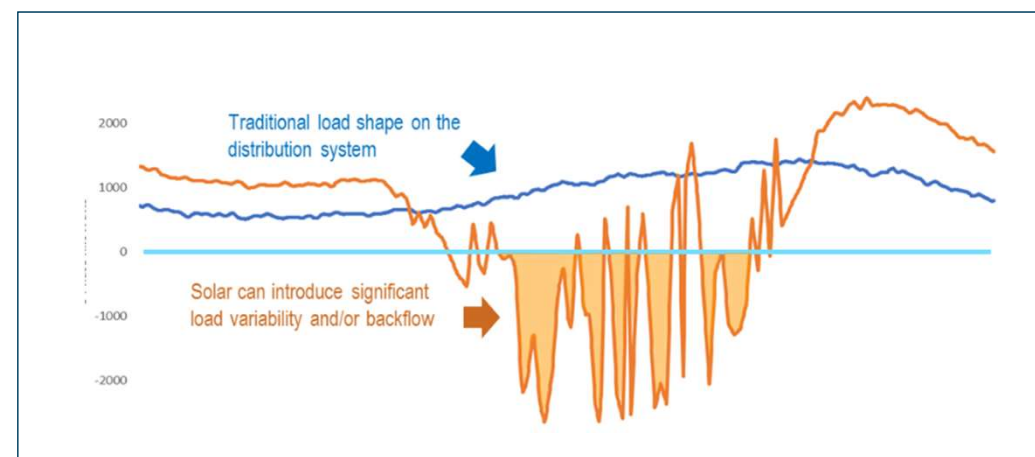
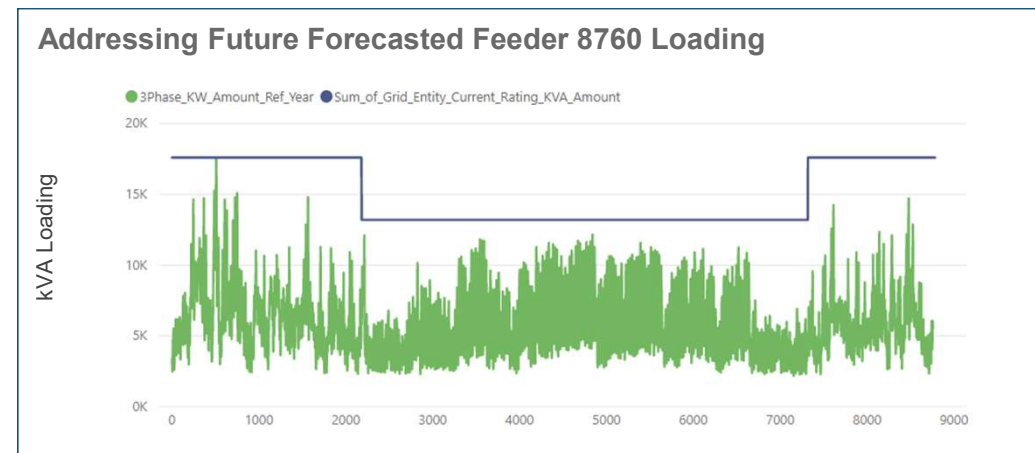


SWITCHGEAR



ADVANCED DISTRIBUTION PLANNING ("ADP") TOOLSET

- Leverage the massive amount of data that Duke now collects to gain and share a more accurate understanding of our system
- Evaluate a range of hourly circuit forecasts, which analyze a broad range of possible future growth patterns and customer programs
- Automate the load-flow analysis to calculate network deficiencies and intelligently solve those deficiencies with both “wire” and “non-wire” alternative solutions
- Evaluate Generation and Transmission stacked benefits for Distribution-sited distributed energy resources (including energy storage)



DATA INFORMED APPROACH TO INVESTMENTS

FULL-SCALE DEPLOYMENT UPDATE

The Advanced Distribution Planning (“ADP”) toolset achieved full-scale deployment to distribution planners in the Carolinas in August 2021.

- Training on tools and processes
- Traditional solutioning such as reconductoring, phase taps, etc.
- Solutioning alternatives on circuits and groups of circuits
- Detailed power flow analysis supporting storage and other use cases for distributed energy resources
- Circuit segmentation capabilities to scope recloser placement
- Data analysis and visualization tools
- Impact assessments for new customer load profiles (i.e., rooftop solar, electric vehicles [EVs], customer programs)
- Recognize opportunities for large new load concentrations (i.e., heavy duty electric vehicle depots)

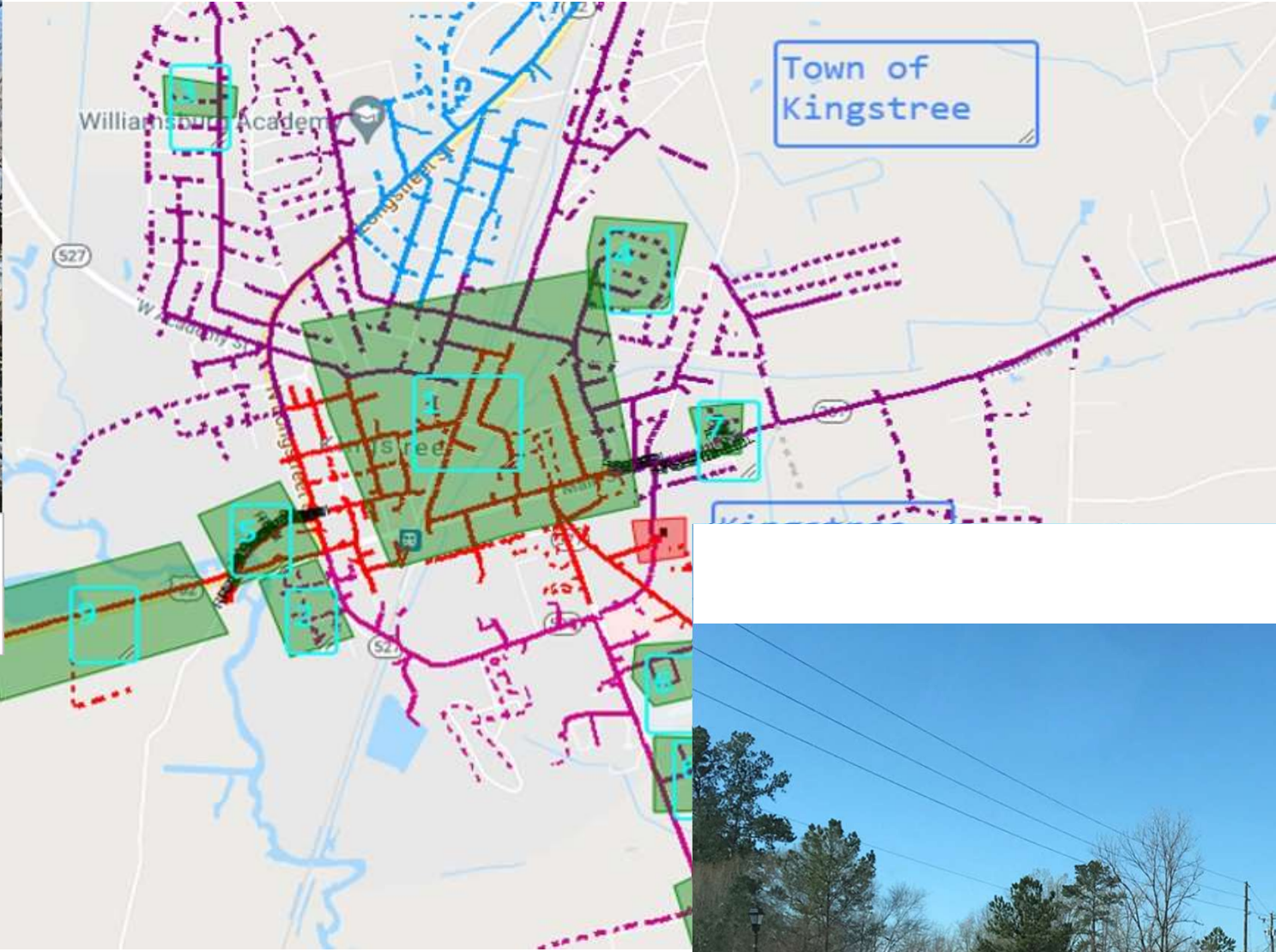


DISTRIBUTION – 2022 PROJECT HIGHLIGHT

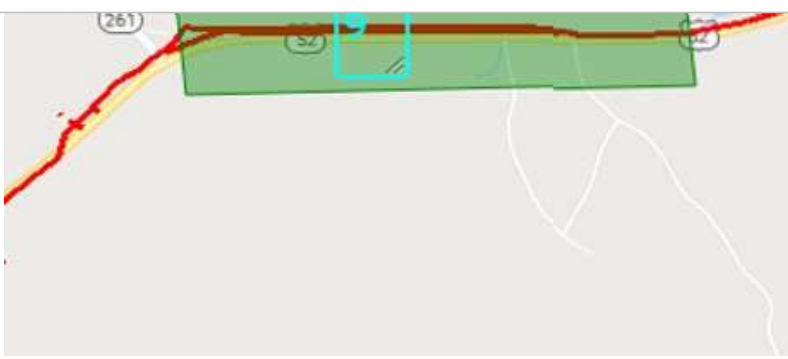
Sam Spilman

Director, Customer Delivery Carolinas Project Management

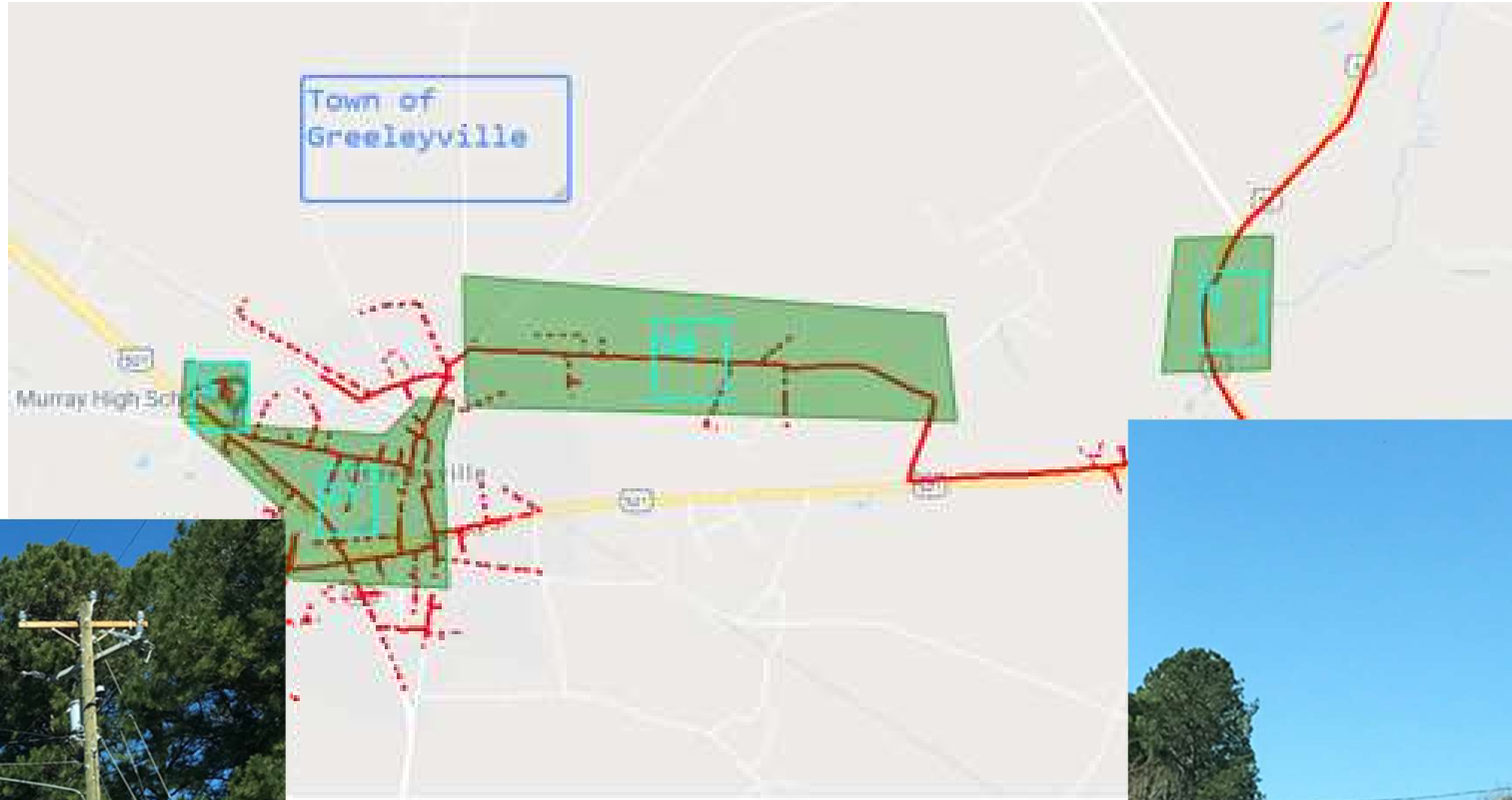
DUKE ENERGY PROGRESS - KINGSTREE SUBSTATION



Circuit Reconductor



DUKE ENERGY PROGRESS – TOWN OF GREELEYVILLE



Greeleyville OH Rebuild



Old Greeleyville Rd Relocation

Duke Energy - General Information for Discussion

DUKE ENERGY PROGRESS - KINGSTREE SUBSTATION

SELF-OPTIMIZING GRID

Reclosers will provide intelligence and control while enabling the ability to automatically reroute power around trouble areas to quickly restore power to the maximum number of customers.

TARGETED UNDERGROUNDING

Converting overhead power line segments to underground can maximize the number of outage events eliminated for customers served by those segments as well as customers upstream.

LONG DURATION INTERRUPTIONS

This reconductoring is designed to improve the reliability in parts of the grid where the duration of potential outages is expected to be much higher than average.

FUSE REPLACEMENTS

Replacing one-time use fuses with automated lateral devices, which are capable of intelligently resetting themselves for reuse, eliminates the unnecessary use of resources.

In addition to the GIP work described above, load growth and reconductor reliability work will also be completed for customers served by this substation.



QUESTIONS AND WRAP-UP

Justin Brown
Director, Planning & Regulatory Support



THANK YOU FOR ATTENDING.

The Virtual Forum has ended.

2021 South Carolina GIP Virtual Forum

Post-Event Survey

* Required

1. On a scale of 1-5, how well did this status report and virtual forum enhance your understanding of the progress made in Duke Energy's South Carolina GIP through 2021?

1 2 3 4 5
☐ ☐ ☐ ☐ ☐

2. On a scale of 1-5, how satisfied are you with the opportunity to provide feedback and dialogue with Duke Energy during and after this virtual forum?

1 2 3 4 5
☐ ☐ ☐ ☐ ☐

3. What changes would you suggest for future meetings?

4. What GIP topics, programs or projects would you be interested in engaging on or hearing more about in future sessions?

5. What grid-oriented programs or projects would you recommend Duke Energy investigate for future grid investments?

6. Name and Contact Information: *